HIGH ENRICHED URANIUM TRANSPARENCY PROGRAM

EAD is supporting the U.S. Department of Energy (DOE) in carrying out its responsibilities under the HEU Transparency Agreement. This agreement between the U.S. and Russian governments allows the United States to purchase low enriched uranium (LEU) that has been blended down from high enriched uranium (HEU) from nuclear weapon components.

PROBLEM/OPPORTUNITY

In February 1993, the United States and Russian Federation signed the HEU Transparency Agreement, which allows the United States to purchase 500 metric tons of Russian LEU that has been blended down from the HEU from their dismantled nuclear weapons. This bilateral agreement was crafted to avoid the rigid verification procedures of previous arms control treaties. Instead, both parties agree to stipulated measures designed to build confidence that the agreement's arms control and nonproliferation objectives are being met.

A number of federal agencies have responsibilities for the HEU Transparency Program. Within DOE, the Office of Nonproliferation and National Security (NN) is responsible for two aspects. The Office of Arms Control and Nonproliferation (NN-40) develops the policy, and the Office of International Nuclear Safety and Cooperation (NN-30) implements the measures.

According to a Memorandum of Understanding, the United States is allowed to implement measures to guarantee that the HEU subject to this agreement is extracted from nuclear weapons, oxidized, blended to LEU, and ultimately shipped to the United States to be fabricated into commercial nuclear reactor fuel. The challenge is to implement a monitoring program that can ensure that the material getting shipped to the United States actually originated from nuclear weapons.

APPROACH

DOE is monitoring activities at four Russian facilities: Siberian Chemical Enterprise, ElectroChemical Plant at Zelenogorsk, Mayak Production Association, and the Ural Electrochemical Integrated Plant (UEIP). The first three facilities are visited six times a year by U.S. teams composed of 5 to 10 scientists. The fourth facility, UEIP, is continuously monitored by teams composed of 3 or 4 scientists who visit for 2 months at a time on a rotating schedule. The monitoring teams collect data and observe the uranium processing activities carried out in the Russian facilities to meet the HEU Transparency Agreement objectives.

RESULTS

Argonne has been helping DOE with the monitoring program at the Russian facilities. Argonne staff provide day-to-day technical management of DOE's permanent office at UEIP in Novouralsk, Russia, and are in contact with the U.S. monitors in Russia on a daily basis to ensure that their activities meet program requirements. Argonne staff have also been stationed in Russia and visited Russia as part of the various teams. Argonne also assists in analyzing the data collected during the monitoring visits. Argonne's involvement helps DOE ensure that the program successfully verifies the source of the material shipped to the United States.

Future

The HEU Transparency Agreement stipulates that the United States will purchase 15,000 metric tons of LEU over a 20-year time frame, with a payment of $12 billion dollars to the Russian Federation. During that time, U.S. monitoring will continue to ensure the agreement objectives are being met. As additional Russian processing facilities are added or the monitoring agreement changes, the United States will enhance its capabilities. If DOE opens an additional permanent office at a nuclear facility, Argonne will help DOE coordinate the planning and startup of the office and manage its operations.

Communication of Results

In 1999, a paper entitled "Creation and Future Legacy of Stockpile Stewardship, Isotope Production, Applications, and Consumption" was presented at a topical symposium of the Health Physics Society. There is also a limited-access Web site on the HEU Transparency Program.

Administration Building at the Ural Electrochemical Integrated Plant in Novouralsk, Russia

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